M.—Transverse Strain on Two simple Rectangular Beams, formed in one casting, connected by Cross Ties, same as Exp. 1, but trussed as per sketch annexed, or from two points. The strain taken *beyond* the line of compression.—The pressure applied in the same way, and bearings similar.

No. 16 Experiment. Weight. 170 oz.		No. 17 Experiment. Weight. 170 oz.		No. 18 Experiment. Weight. 172 oz.		No. 19 Experiment. Weight. 172 oz.	
Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.
220	·005	220	·007	220	·002	220	·006
413	·007	413	·012	413	·004	413	·01
497	·01	497	·016	497	·006	497	·013
587	·016	587	·021	587	·01	587	·017
665	·02	665	·025	665	·015	665	·0225
743	·024	743	·028	743	·019	743	·026
821	·027	821	·032	821	·024	821	·03
911	·032	911	·037	911	·028	911	·033
1001	·036	1001	·04	1001	·033	1001	·037
1085	·04	1085	·044	1085	·036	1085	·041
1175	·044	1175	·049	1175	·041	1175	·045
1256	·049	1256	·053	1256	·044	1256	·05
1346	·053	1346	·057	1346	·049	1346	·053
1433	·056	1433	·061	1433	·053	1433	·057
1520	·059	1520	·065	1520	·057	1520	·06
1607	·063	1607	·07	1607	·06	1607	·063
1712	·067	1712	·073	1712	·065	1712‡	·068
1793	·071	1793	·077	1793	·067	1793	·072
1913	·075	1913	·085	1913	·072	1913	·08
1991	·078	1991	·09	1991	·074	1991	·081
2063	·082	2063	·095	2063	·077	2063	·084
2132	·086	2132	·098	2132	·081	2132	·086
2201	·089	2201	·101	2201	·084	2201	·09
2267	·093	2267	·105	2267	·086	2267§	·094
2354	·097	2354	·109	2354	·091	2354‖	·098
2441	·101	2441	·114	2441	·097	2441	·104
2510	·105	2510	†	2510	†	2510	†
2579	·108						
2645	·112						
2714	·116						
2783	·119						
2849	·123						
2915	·126						
2981	·129						
3067	·134						
3143	·137						
3206	·141						
3269	*						

* Broke central. Loaded with great care. Lever fell 1 inch.
† Broke.
Exp. 17.—Bolt not broken.
Exp. 18.—Very carefully loaded.
‡ Load crack.
§ Broke.
‖ Load trusses. Fracture similar to No. 17; not opposite to each other. Lever fell 11 inch. Bolt not broken.

ABSTRACT OF EXPERIMENTS

UPON PLAIN, BOX, AND TRUSSED IRON BEAMS.

Length 24 inches: Depth and Sections as described.

Reference to Detailed Table	Mean Weight of Beams Bare	Mean breaking Wt. in lbs.	No. of Experiments of Each	Mean of Deflections	Proportion of Deflection to Depth	Mean of the Ultimate Weight	Relative Value of the Weights and Breaking Weight U.S.
A	54½	1642	4	185	1-12th	482	1—1
B	109½	2755	4	151	1-13th	403	2—1·7
C	112½	2775	3	148	1-14th	393	2·06—1·7
D	112	4065	3	212	1-10th	580	2·06—2·5
E	112	757	1	670	1-3rd	108	2·06—·46
F	156½	1483	1	442	45-100ths	152	3·—·9
G	160½	3492	4	130	1-14th	333	3·—2·12
H	200	4336	1	101	1-20th	125	3·6—2·64
I	120½	2818	4	123	1-16th	350	2·2—1·71
J	120*	3115	5	122	1-16th	359	2·35—1·9
K	134½*	3094	3	129	1-15th	359	2·47—1·84
L	155½*	3335	4	129	1-15th	343	2·84—2·01
M	173*	2699	4	114	1-17th	246	3·2—1·64

* Bolt included.

FIRST COMPENSATION CASE, BATTERSEA PARK.

In consequence of the brief notice, in a recent number, of the ill-treatment which Mr. Chabot received at the hands of the jury in respect of compensation for his land at Battersea, Mr. Lee, one of the surveyors examined, addressed a letter to us last week, which he has since advertised in the daily papers. We give the material portions of it:—

"Mr. Chabot received a notice to send in his claim for the land in question, which is part of a grant from King Charles the First in 1627 to Viscount Grandison, from whom it descended by inheritance and purchase to the late Earl Spencer, by whom it was sold in the year 1835 to Mr. Chabot, the claimant, *as freehold*, and no person has before this time disputed Earl Spencer's title. The land contains rather better than three acres, two acres of which are situate between the river wall and the river. These two acres were formerly used as wet timber-docks. The remaining one acre consists of the river wall and a strip of meadow land. Since Mr. Chabot's purchase, these docks have been filled up by several thousand barge loads of dry rubbish being deposited thereon.

Shortly after Mr. Chabot purchased the property in question, he had an offer of 1,000*l.* profit on the sum which he gave, this sum being known; rather more than two years ago (before the proposed park was determined) he was offered 3,000*l.* for it; latterly, 6,000*l.* was offered, and he had also several offers to rent it; but he being well acquainted with the value of river-side property, declined these offers, knowing full well that in a few years this land would be worth much more, and it would therefore pay him well to keep it unoccupied.

As to the present value, the length of frontage towards the river is 520 feet; this, if put at only 20*s.* per foot lineal, and at twenty years' purchase, is 10,400*l.*; from this amount deduct the cost of 520 feet lineal of wharf-wall and road, which would be 2,750*l.*, and the sum of 7,650*l.* remains as the value of the frontage land, independent of the back ground. Now any gentleman acquainted with the value of wharf and river-side property must be aware, that 20*s.* per foot lineal for land on the margin of the river Thames, 200 feet in depth, is not an excessive price on the London side of Battersea-bridge, when similar frontages let for 24*s.* and 25*s.* per foot lineal above Battersea-bridge, and from 60*s.* to 100*s.* per foot lineal between Vauxhall and Westminster bridges; and in this valuation there is nothing added for forced sale and expenses."

"The Crown surveyors were prepared to give much more than the jury awarded; they were well aware that the land in question was very valuable, as Mr. Pennethorne stated, when giving evidence before the Committee for the Improvement of the Metropolis in the year 1845.

This is the first case I have heard of wherein a question of title, without previous notice being given, has been submitted to, and decided by, the jury; but on this occasion the Attorney General (as counsel for the Crown), in his speech, claimed on behalf of the Crown the whole of the land between the river-wall and the river, comprising two acres; and the Recorder of the City of London (who was present also as counsel for the Crown) confirmed the claim; and as this claim was made only in the Attorney General's speech, and as he called no witnesses, Mr. Chabot's counsel had no opportunity of refuting it and shewing a proper title.

How is this claim justified by the facts? The manor of Battersea and Wandsworth was given by William the Conqueror to Westminster Abbey in exchange for Windsor: after the dissolution of the monasteries this manor was reserved in the hands of the Crown until the year 1627, when it was granted in fee by King Charles the First to Oliver St. John Viscount Grandison, from whom it descended in the St. John family till 1763, when it was bought in trust for John Viscount Spencer. The grant, after reciting the boundaries of the manor, proceeds thus:—'With all the rights members and appurtenances thereto belonging, also all meadows, waste grounds, marshes, emoluments, and hereditaments whatsoever thereto belonging or appertaining, as part, parcel, or member of them, or either of them, at any time heretofore, taken, reputed, known, used, or enjoyed, as fully, freely, and absolutely, as our said late father, or any of our progenitors, kings or queens of England, and as fully, freely, and absolutely, and in as ample manner and form as our said late father then held the same, or could have held the premises if they or any of them had remained in his own hands.' These words are sufficient to convey all the right of the Crown; and as it is well known that land left by the tide belongs to the Crown, the land in question between the river wall and the river must have been conveyed by the Crown to Viscount Grandison, and it cannot therefore be now Crown property. Yet, notwithstanding, the assessor (Mr. Wallinger), in summing up to the jury, dwelt on this unjust claim as one that must be entertained by the jury, and in confirmation of his view he read a clause from the Battersea-park Act, which recites, that there is a dispute between the Crown and the City as to the right to the soil of the river, so far as the tide flows and reflows, &c., &c.; he commented on this recital and on the evidence that the water formerly flowed over these docks, and then, without summing up or alluding to the evidence in support of Mr. Chabot's claim, he left the question to the jury. The clause so read by Mr. Wallinger does not state that Mr. Chabot's land is part of the soil in dispute, but the jury presumed that the claim would not have been made unless it could be substantiated, and they therefore deprived Mr. Chabot of his frontage to the Thames and two acres of his most valuable land."

It seems clear that Mr. Chabot has been most unjustly treated, and it is to be hoped that the Crown, on a proper representation being made, will take his case again into consideration. His title was *insinuated* away, without giving him the opportunity of adducing proof in establishment of it. This decision affects a large amount of property, and ought not to be allowed to pass quietly.

CORROSION OF IRON.

Mr. Thomas Spencer recently read a paper, before the Liverpool Polytechnic Society, "On iron, its active and inactive states," wherein he made some observations on rust.

Iron, he said, above all the useful metals, had the greatest affinity for oxygen: in other words, its surface became sooner subject to rust than all other metals and substances, setting aside the alkaline earths. In our climate this undesirable property was witnessed more than in other countries: in Upper Egypt instruments of polished steel might be kept in the open air without losing their brilliancy. Dry atmosphere, although it contains 20 per cent. of free oxygen, would not alone cause iron to rust. The atmosphere had always, however, in combination with it what was called aqueous vapour, but which was in reality steam. We might immerse the most brilliant polished steel in oxygen gas without a change taking place on its surface. Neither oxygen nor steam could of itself corrode iron. Let it be remembered, these bodies were the only ones to which it was exposed. Under what circumstances, then, did this general and all-pervading action take place? An answer to this was given by a simple experiment. If one end of a slip of polished iron were kept in pure water while the other end was in the atmosphere, it would seem that the part of the iron which first corroded was at the surface of the water, and this long before the ends of the iron were acted upon. It required a mixture of air and water, what was usually termed dampness, neither the one nor the other being able to produce the effect alone. Steel filings became rusty in water. Why? Because they absorbed the oxygen in the water. If a second quantity of filings were put in they would not rust, because the oxygen had been already subtracted.

The reader shewed by experiment that a coating of carbon effectually prevents iron from oxidation, and that it can protect it from a body so strong as even aqua fortis itself. If the aqua fortis were diluted with water, however, the protective power no longer exists.

We all knew, he said, that should a piece of this metal be immersed in nitric or sulphuric acid, a great action ensued, fumes were given off, whilst the iron itself was dissolved; the result was owing to the strong affinity of this metal for oxygen: if gold were immersed, no such action took place. Iron had the same action on a solution of silver or copper, so that precipitation ensued. He (Mr. S.) could well conceive how astonished the experimenter must have been when he discovered that, by a simple means, clean bright iron, without protection, might be placed in nitric acid without any decomposition taking place, and that the act of immersion, which generally destroyed, should now preserve; but more extraordinary still, its hitherto active surface had become so 'catalepsed,' if he might use the term, that it might be plunged into a strong solution of copper or silver without these metals being precipitated, or having its brilliancy diminished. He shewed by experiment, that if a piece of platinum or of gold were placed at the bottom of a vessel containing nitric acid, and a piece of iron immersed and placed in contact with it, the action which would otherwise ensue was destroyed. If there was, however, the slightest scratch or abrasion on the surface of the metal, the protecting influence was gone. A piece of solid carbon also imparts a protective property to iron, little short of that given it by platinum.

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